

CLAIMS

1. A liquid discharge head comprising:
 - a plurality of outlets for discharging liquid;
 - a plurality of liquid channels, each liquid
 - 5 channel communicating with the corresponding outlet;
 - an inlet for supplying liquid to the liquid channels, the inlet being provided on a substrate;
 - a plurality of recording elements disposed in the corresponding liquid channel opposite to the
 - 10 plurality of outlets, each recording element including a heating resistor provided on the substrate, wherein
 - the outlets include first outlets disposed
 - relatively closer to the inlet and second outlets
 - 15 disposed relatively further from the inlet and are arranged in a staggered pattern in which the first outlets and the second outlets are disposed alternately on at least one side of the inlet,
 - the recording elements include first recording
 - 20 elements corresponding to the first outlets and second recording elements corresponding to the second outlets, and
 - an aspect ratio based on the flow direction of the liquid channels of the first recording elements
 - 25 is greater than the aspect ratio of the second recording elements.

2. The liquid discharge head according to Claim 1, wherein

each droplet discharged from the first outlets and each droplet discharged from the second outlets
5 have substantially the same volume, and

the value obtained by dividing the area of one of the second recording elements by the area of one of the first recording elements is smaller than 0.95 and greater than 0.60 and the value obtained by
10 dividing the aspect ratio one of the second recording elements by the aspect ratio of one of the first recording elements is smaller than 0.95.

3. The liquid discharge head according to Claim
15 1, wherein the volume of each droplet discharged from the second outlets is smaller than the volume of each droplet discharged from the first outlets.

4. The liquid discharge head according to Claim
20 3, wherein the volume of each droplet discharged from the second outlets is 0.4 to 1.0 picoliters.

5. The liquid discharge head according to Claim 1, wherein
25 the liquid channels include first liquid channels where the first recording elements are disposed and second liquid channels where the second

recording elements are disposed, and

the width of sections of the second channels
interposed between adjacent first recording elements
is substantially the same as the width of the first
5 recording elements or narrower than the width of the
first recording elements.

6. The liquid discharge head according to Claim
1, further comprising:

10 a first outlet group including first outlets;
and

a second outlet group including second outlets,
wherein the first and second outlet groups are
disposed on both sides of the inlet, and

15 the first outlet group and the second outlet
group are offset a half pitch with respect to each
other.

7. The liquid discharge head according to Claim
1, further comprising:

20 a power supply unit configured to supply
driving voltages to the recording elements;

drivers capable of switching condition of the
power distribution to the recording elements, the
drivers being disposed on the recording elements; and

25 logic circuits configured to selectively drive
the drivers,

wherein the logic circuits include first and

second driving time determining signal supplying
units configured to output a signal corresponding to
the driving time of the recording elements to the
drivers, the first driving time determining signal
5 supplying unit being provided for the first recording
elements and the second driving time determining
signal supplying unit being provided for the second
recording elements.

10 8. The liquid discharge head according to Claim
1, further comprising:

first and second power supply unit configured
to supply driving voltages to the recording elements;
drivers capable of switching condition of the
15 power distribution to the recording elements, the
drivers being disposed on recording elements; and
logic circuits configured to selectively drive
the drivers,

wherein the first power supply unit is provided
20 for the first recording elements and the second power
supply unit is provided for the second recording
elements.